Academy of Mathematics and Systems Science
Chinese Academy of Sciences

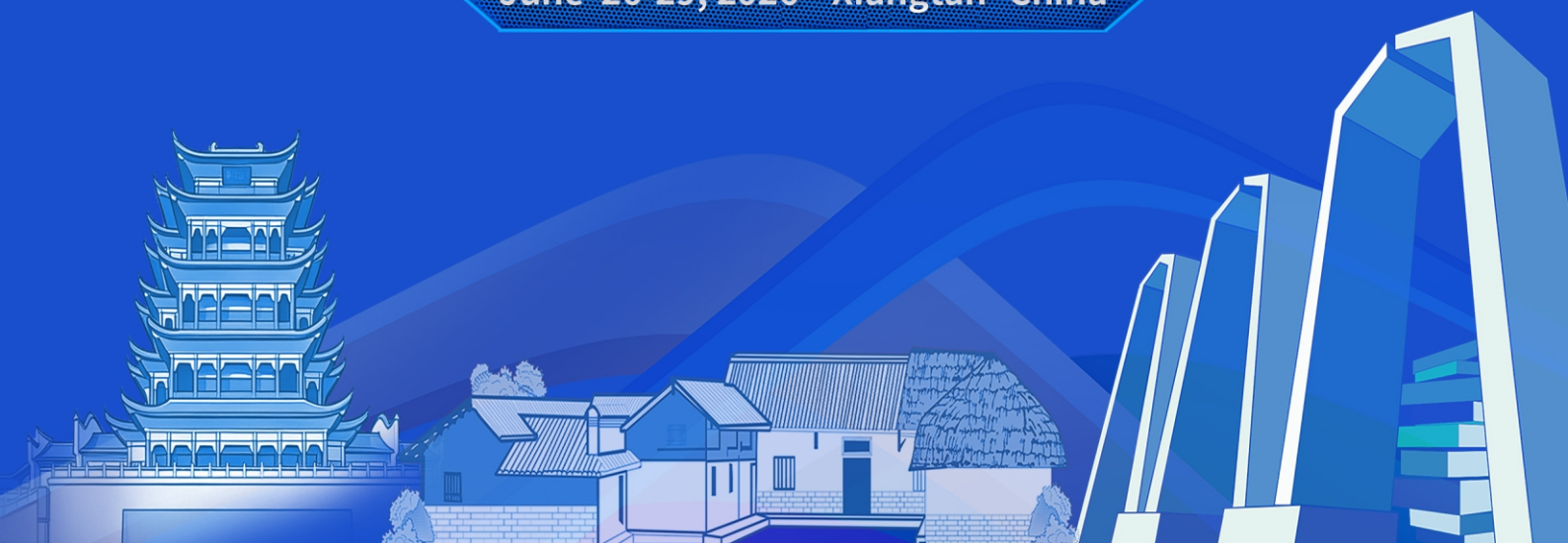
Xiangtan University

2026 International Workshop on Modern Optimization and Applications (MOA2026)

Conference Manual

Academy of Mathematics and Systems Science, Chinese Academy of Sciences
School of Mathematics and Computational Science, Xiangtan University
Hunan Shaofeng Institute for Applied Mathematics

June 26-29, 2026 Xiangtan · China



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https://lsec.cc.ac.cn/~moa2026

Information for Participants

Workshop Site

Workshop Site I: School of Mathematics and Computational Science of Xiangtan University (XTU)

Address: North Second Ring Road, Yuhu District, Xiangtan, China

Workshop Site II: Huayin International Hotel

Address: No. 68 Shaoshan East Road, Yuhu District, Xiangtan, China

Registration

Registration will be held from 14:00 to 20:00 on June 26 at the 1st Floor of Huayin International Hotel, or on the morning of June 27 at the School of Mathematics and Computational Science, Xiangtan University. For registration at other times, please contact workshop secretaries Ms. Yang Li or Dr. Wei Lv.

Contact Information

If you need any help, please contact the conference secretaries:

- **Ms. Yang Li, liyang@lsec.cc.ac.cn**
- **Dr. Wei Lv, lvwei@xtu.edu.cn**

Conference Overview and Sponsors

Conference Overview

The **2026 International Workshop on Modern Optimization and Applications (MOA2026)** will be held in Xiangtan, China, from June 26 to June 29, 2026. This workshop serves as the 5th edition of this biennial conference series, building upon the success of previous gatherings held in 2016, 2018, 2020, and 2024. This workshop is specially to commemorate Professor M.J.D. Powell for his 90th anniversary of birth.

The primary objective of MOA2026 is to bring together leading scientists, researchers, and practitioners from around the globe to exchange innovative ideas and discuss the latest developments in the field of optimization. The workshop aims to foster interdisciplinary collaboration by bridging the gap between optimization theory, algorithmic development, and real-world applications.

A distinctive feature of MOA2026 is its emphasis on the interplay between mathematical rigor and practical implementation. The conference will provide a dynamic forum for:

- Researchers to present cutting-edge theoretical results and novel algorithms.
- Practitioners from engineering, industry, and management sectors to demonstrate complex application challenges.
- Collaborative dialogue on constructing suitable optimization models and identifying efficient solvers for large-scale industrial problems.

We warmly invite you to join us in Xiangtan for stimulating discussions and networking opportunities.

Sponsors

- Academy of Mathematics and Systems Science, Chinese Academy of Sciences
- Xiangtan University
- Hunan Shaofeng Institute for Applied Mathematics

Committees

Organizing Committee

- Xingju Cai, Nanjing Normal University
- Yu-Hong Dai (**Chair**), AMSS, Chinese Academy of Sciences
- Deren Han, Beihang University
- Thorsten Koch, Zuse Institute Berlin & Technische Universitaet Berlin
- Xin Liu, AMSS, Chinese Academy of Sciences
- Ya-Feng Liu, Beijing University of Posts and Telecommunications
- Jiawang Nie, University of California
- Jiming Peng, University of Houston
- Zheng Peng, Xiangtan University
- Zaiwen Wen, Peking University
- Zaikun Zhang, Sun Yat-sen University

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- Guanghui (George) Lan, Georgia Institute of Technology
- Zhi-Quan Luo, Chinese University of Hong Kong, Shenzhen
- Oleg Prokopyev, University of Pittsburgh
- Defeng Sun, The Hong Kong Polytechnic University
- Xiaojiao Tong, Xiangtan University
- Yinyu Ye, Stanford University
- Ya-xiang Yuan (**Chair**), AMSS, Chinese Academy of Sciences

2026 International Workshop on Modern Optimization and Applications

Schedule

Time: June 26-29, 2026

Venue: School of Mathematics and Computational Science of Xiangtan University (XTU) and Huayin International Hotel

June 26, 2026 **Venue: Lecture Hall A501, School of Mathematics and Computational Science, XTU**	
Short Course, 14: 30-17: 45, Chair: Zheng Xie	
14:30-16:00	**Zhaosong Lu** (University of Minnesota) **First-order methods for bilevel and minimax optimization**
16:00-16:15	Coffee Break
16:15-17:45	**Zaiwen Wen** (Peking University) **Exploring learning-based algorithms and theories in mathematical optimization**
18:00-	Dinner (2nd Floor Buffet Restaurant, Huayin International Hotel)

June 27, 2026 Venue: Lecture Hall (Level B1), School of Mathematics and Computational Science, XTU	
Opening Ceremony, 8:30-9:10, Chair: Xin Liu	
8:30-8:50	Welcome Address
8:50-9:10	Photo Taking
Session 1, 9:10-10:00, Chair: Ya-xiang Yuan	
9:10-10:00	**Talk 1: Philippe Toint** (University of Namur) **A unified convergence theory for adaptive first-order methods in the nonconvex case, including AdaNorm, full and diagonal AdaGrad, Shampoo and Muon**
10:00-10:20	Coffee Break
Session 2, 10:20-12:00, Chair: Philippe Toint	
10:20-11:10	**Talk 2: Ya-xiang Yuan** (AMSS, Chinese Academy of Sciences) **On the contributions of M.J.D. Powell to trust region algorithms**
11:10-12:00	**Talk 3: Xiaojun Chen** (The Hong Kong Polytechnic University) **Optimization methods for tackling existence proofs of spherical t-designs**
12:00-	Lunch (Banquet Hall of Songtao Villa Hotel)
Session 3, 14:00-16:30, Chair: Ya-Feng Liu	
14:00-14:50 (Online)	**Talk 4: Thorsten Koch** (Technical University of Berlin and Zuse Institute Berlin (ZIB)) **QUBO, HUBO, BIP, CPU, GPU, QPU and empirical hardness of instances** (Tencent Meeting/VooV Meeting: 472 828 768)
14:50-15:40	**Talk 5: Serge Gratton (**National Polytechnic of Toulouse**)** **OFFO algorithms for optimization problems with general constraints. Part I : Convergence and complexity**
15:40-16:30	**Talk 6: Zhaosong Lu** (University of Minnesota) **Variance-reduced first-order methods for constrained stochastic and finite-sum optimization**
Poster Session I, 16:30-19:00, Chair: Xingju Cai	
16:30-19:00	Poster Session (Part I) (1st Floor Lobby, School of Mathematics and Computational Science, XTU)
19:00-	Banquet (5th Floor Huayun Hall, Huayin International Hotel)

June 28, 2026 Venue: Multi-function Hall (2nd Floor), Huayin International Hotel	
Session 4, 8:30-10:10, Chair: Serge Gratton	
8:30-9:20	**Talk 7: Marc Teboulle** (Tel Aviv University) **Smoothing alternating minimization for nonsmooth nonconvex sum-min problems**
9:20-10:10	**Talk 8: Defeng Sun** (The Hong Kong Polytechnic University) **On the semismoothness of projections in conic optimization**
10:10-10:20	Coffee Break
Session 5, 10:20-12:00, Chair: Deren Han	
10:20-11:10	**Talk 9: Jiawang Nie** (University of California, San Diego) **The rank one tensor completion problem**
11:10-12:00	**Talk 10: Mingyi Hong** (University of Minnesota) **Optimization for large language model pre-training: new algorithms, theory, and insights**
12:00-	Lunch (2nd Floor Buffet Restaurant, Huayin International Hotel)
Session 6, 14:00-16:30, Chair: Liwei Zhang	
14:00-14:50	**Talk 11: Ambros Gleixner** (HTW Berlin and Zuse Institute Berlin (ZIB)) **On correctness of numerical solvers in mixed-integer optimization**
14:50-15:40	**Talk 12: Xin Chen** (Georgia Institute of Technology) **Singleton optimality and DNN exactness of random StQPs**
15:40-16:30	**Talk 13: Wei-Kun Chen (Beijing Institute of Technology)** **Exploiting variable implications in presolve for mixed integer programming**
Poster Session II, 16:30-18:30, Chair: Zheng Peng	
16:30-18:30	Poster Session (Part II) (Multi-function Hall (2nd Floor), Huayin International Hotel)
18:30-	Dinner (2nd Floor Buffet Restaurant, Huayin International Hotel)

June 29, 2026 Venue: Multi-function Hall (2nd Floor), Huayin International Hotel	
Session 7, 8:30-10:10, Chair: Xinwei Liu	
8:30-9:20	**Talk 14: Shoham Sabach** (Cornell University) **Localization of wireless sensor networks: algorithms and theory**
9:20-10:10	**Talk 15: Yong Xia** (Beihang University) **A modern optimization view of the power method**
10:10-10:20	Coffee Break
Session 8, 10:20-12:00, Chair: Xiaojiao Tong	
10:20-11:10 (Online)	**Talk 16: Guanghui (George) Lan** (Georgia Institute of Technology) **Stochastic auto-conditioned fast gradient methods with optimal rates** (Tencent Meeting/VooV Meeting: 304 603 342)
11:10-12:00 (Online)	**Talk 17: Weijun Xie** (Georgia Institute of Technology) **Distributionally robust universal classification: bypassing the curse of dimensionality** (Tencent Meeting/VooV Meeting: 304 603 342)
12:00-	Lunch (2nd Floor Buffet Restaurant, Huayin International Hotel)
Session 9, 14:00-16:30, Chair: Cong Sun	
14:00-14:50	**Talk 18: Ruoyu Sun** (The Chinese University of Hong Kong, Shenzhen) **Optimization for neural networks: Global landscapes and local structures**
14:50-15:40	**Talk 19: Shaoning Han** (National University of Singapore) **A geometric perspective on polynomially solvable convex maximization**
15:40-16:30	**Talk 20: Zaikun Zhang** (Sun Yat-sen University) **Powell, Yuan--Stoer, and optimist**
Closing Ceremony, 16:30-17:00, Chair: Zaiwen Wen	
16:30-17:00	Closing Address and “Best Poster Award” Announcement
17:30-	Dinner (2nd Floor Buffet Restaurant, Huayin International Hotel)

Short Course I:

First-order methods for bilevel and minimax optimization

Zhaosong Lu
University of Minnesota

Abstract. Bilevel and minimax optimization are two fundamentally important areas of modern mathematical optimization. They have found numerous applications in machine learning, artificial intelligence, data science, operations research, and engineering. In this short course, we will present recent developments in first-order methods for general bilevel and minimax optimization problems. In particular, we will introduce penalty and augmented Lagrangian frameworks that transform these problems into either a single structured minimax problem or a sequence of structured minimax subproblems. We will then discuss scalable first-order methods for solving the resulting problems and present their first-order operation complexity. Finally, we will provide preliminary numerical results to illustrate their performance.

Speaker Biography. Zhaosong Lu is a Full Professor in the Department of Industrial and Systems Engineering at the University of Minnesota. He received his Ph.D. in Operations Research from the Georgia Institute of Technology. His research focuses on the theory and algorithms of continuous optimization, with applications in data science and machine learning. Dr. Lu has published extensively in leading journals, and his work has been supported by major funding agencies, including AFOSR, NSF, and ONR. He has served on several prize committees, such as the INFORMS George Nicholson Prize Committee and the ICCOPT Best Paper Award Committee. He has also served as an Associate Editor for leading journals, including Mathematics of Operations Research, SIAM Journal on Optimization, Computational Optimization and Applications, and Journal of Global Optimization.

Short Course II:

Exploring learning-based algorithms and theories in mathematical optimization

Zaiwen Wen
Peking University

Abstract. In this talk, we explore emerging paradigms that integrate data, models, algorithms, and theory in mathematical optimization. We first discuss the construction of mathematical optimization datasets with the assistance of large language models, focusing on adaptive modeling and structural extraction tailored to problem structures and application scenarios. We then present AI-driven optimization algorithms, including ODE-based learning-to-optimize methods, Monte Carlo policy optimization algorithms for binary integer programming, path-planning problems, and learning-based optimization approaches for DAG heterogeneous scheduling and quadratic assignment problems. Finally, we discuss the vision of advancing automated theorem proving by formalizing knowledge bases through mathematical optimization.

Speaker Biography. Zaiwen Wen, Boya Distinguished Professor at Peking University. His primary research interests include optimization algorithms and theory, machine learning, and artificial intelligence. He received the China Youth Science and Technology Award in 2016, was selected for the National Ten Thousand Talents Program in 2020, and was appointed as a Changjiang Distinguished Professor by the Ministry of Education in 2023. He currently serves on the editorial boards of Mathematics of Operations Research, Optimization Methods and Software, Journal of Scientific Computing, Journal of the Operations Research Society of China, and CSIAM Transactions on Applied Mathematics, and is also Vice President of the Operations Research Society of China.

Invited Talk 1:

A unified convergence theory for adaptive first-order methods in the nonconvex case, including AdaNorm, full and diagonal AdaGrad, Shampoo and Muon

Philippe Toint
University of Namur

Abstract. A unified framework for first-order optimization algorithms for nonconvex unconstrained optimization will be proposed that uses adaptively preconditioned gradients and includes popular methods such as full and diagonal AdaGrad, AdaNorm, as well as adaptive variants of Shampoo and Muon This framework also allows combining heterogeneous geometries across different groups of variables while preserving a unified convergence analysis. A fully stochastic global rate-of-convergence analysis will be summarized for all methods in the framework, with and without momentum, using reasonable assumptions on the variance of the gradient oracle and without assuming bounded stochastic gradients or small enough stepsize. If time allows, an asynchronous variant of this framework will also be presented.

Speaker Biography. Philippe Toint is Professor Emeritus at the University of Namur and an Honorary Professor at the University of Edinburgh. He received his Ph.D. in 1978 under the supervision of Professor M.J.D. Powell. Lecturer at the University of Namur in 1979, he became a full professor in 1993. His research includes numerical optimization and transportation science, with major contributions to trust-region methods, complexity analysis of optimization algorithms, and the development of optimization software and benchmarking environments. He has published four books and over 300 papers and reports. Elected as SIAM Fellow in 2009, he was awarded the Beale-Orchard-Hayes Prize in 1994 and the Lagrange Prize in Continuous Optimization in 2006. He is the past Chairman of the Mathematical Programming Society, serving from 2010 to 2013.

Invited Talk 2:

On the contributions of M.J.D. Powell to trust region algorithms

Ya-xiang Yuan
AMSS, Chinese Academy of Sciences

Abstract. This talk reviews the fundamental contributions of Michael J.D. Powell to the development and analysis of trust region methods in nonlinear optimization. Powell not only introduced the core concepts of trust region algorithms in 1970 but also established their global convergence properties and extended their applicability to constrained optimization and derivative-free settings. His pioneering work laid the foundation for what became one of the two principal paradigms in numerical optimization, alongside line search methods. We trace the evolution of Powell's ideas from the original 1970 algorithm through his convergence analyses in the 1970s and 1980s, his work on constrained problems, and his later contributions to derivative-free optimization. The lasting impact of his research is evidenced by the continued development of trust region methods in contemporary optimization theory and software.

Speaker Biography. Ya-xiang Yuan is a professor at the Academy of Mathematics and Systems Science, Chinese Academy of Sciences. He graduated from Xiangtan University in 1982, and obtained his Ph.D. from Cambridge University in 1986. He mainly works on numerical methods for nonlinear optimization, he has made outstanding contributions to trust region algorithms, quasi-Newton methods, nonlinear conjugate gradient methods and subspace methods. He gave a plenary lecture at ICIAM 1999, and an invited lecture at ICM-2014. He won numerous awards, including Fox Prize (London, 1985), National Natural Science Award (2nd grade, Beijing 2006), Shiing S. Chern Award of CMS (Beijing, 2011), TWAS Prize of Mathemtaics (2014), Su Buqing Prize of CSIAM (Beijing, 2016), Ho Leung Ho Lee Prize (Beijing, 2016) and SIAM Prize for Distinguished Service to the Profession (Pittsburg, 2017).

Invited Talk 3:

Optimization methods for tackling existence proofs of spherical *t*-designs

Xiaojun Chen
The Hong Kong Polytechnic University

Abstract. A finite set of points on the unit sphere in the Euclidean space R^{d+1} is called a spherical *t*-design if for any polynomial *p* of degree at most *t*, the average value of *p* on the set equals the average value of *p* on the whole sphere. The existence of a spherical *t*-design for any $t \geq 1$ and $d \geq 1$ was proved in 1984. We showed that the existence of a spherical *t*-design is equivalent to the existence of a solution of an optimization problem in $R^{(t+1)^2}$ for $t \geq 1$ and $d = 2$ in 2006. Moreover we proved the existence of spherical *t*-designs with $(t+1)^2$ points for t up to 100 and $d = 2$ in 2011 by using the optimization formulation. Fields Medal 2022 winner, Viazovska and her collaborators proved the existence of a spherical *t*-design with (t^d) points for any fixed d in 2013. However, the exact number of points for a spherical *t*-design is still unknown for any $t \geq 1$ and $d \geq 1$. We will review the development on existence proofs for spherical t-designs and present our recent results on spherical zone *t*-designs for $d = 2$. Joint works with An, Frommer, Lang, Li, Sloan and Womersley.

Speaker Biography. Xiaojun Chen is a Chair Professor of Department of Applied Mathematics, Hong Kong Polytechnic University. She is the Co-Director of CAS AMSS-PolyU Joint Laboratory of Applied Mathematics. Her research interests focus on mathematical optimization theory and algorithms for nonsmooth nonconvex optimization problems and stochastic variational inequalities with applications in data sciences. She is the PI of several large grants from Hong Kong Research Grant Council and Croucher Foundation. She published over 100 papers in top journals in applied mathematics. She served/serves SIAM Journal on Numerical Analysis, SIAM Journal on Optimization and SIAM Journal on Control and Optimization as an Associate Editor. She is a fellow of Society for Industrial and Applied Mathematics (SIAM) and a fellow of American Mathematical Society (AMS). She is a Keynote speaker of the 25th International Symposium on Mathematical Programming in Canada 2024 and the 16th Viennese Conference on Optimal Control and Dynamic Games in Austria 2025, and an invited 45-minute speaker in the International Congress of Mathematics (ICM) in Philadelphia 2026.

Invited Talk 4:

QUBO, HUBO, BIP, CPU, GPU, QPU, and empirical hardness of instances

Thorsten Koch
Technical University of Berlin and Zuse Institute Berlin (ZIB)

Abstract. With the emergence of the first quantum computers and methods such as Quantum Annealing and Quantum Approximate Optimization Algorithm (QAOA), there has been a renewed interest in optimization over binary variables. Such problems can be modeled in several ways, including binary integer linear or quadratic programs, Quadratic Unconstrained Binary Optimization problems (QUBO), and Higher-Order Unconstrained Binary Optimization problems (HUBO). Variables may be represented either as {0,1} or as {-1,1} spin variables. In theory, there is not much difference; everything can be 1-to-1 transformed into each other, and most interesting problems are NP-hard. However, in practice, for $n \to \infty$ the situation is different. While some problems can be hard to solve with fewer than 100 variables, many require more than 1,000 variables to become computationally challenging. We need to distinguish between primal and dual hard instances. Is it hard to find the optimal solution, or is proving optimality the bottleneck There seem to be surprisingly few small practical instances that are hard in both senses. What role do different algorithms play in determining empirical hardness Some algorithms are clearly better suited to certain problem classes than others, but can this be predicted in advance? Which instance features make a problem hard? In practice, solving an optimization problem also requires mapping an algorithm to hardware. When do multiple cores help, and how well does an algorithm scale When are GPUs useful, and when are they not What about machine learning? Can we train an algorithm to solve a problem? How does this compare to the results we get from quantum computers, and how much potential do such platforms have? In this talk, we will discuss these questions and present some empirical results and answers.

Speaker Biography. Thorsten Koch is Professor for Software and Algorithms for Discrete Optimization at TU-Berlin and head of the Applied Optimization and the Digital Data and Information for Society, Science, and Culture departments at the Zuse Institute Berlin (ZIB). With more than 40 years of experience in software development, he has worked in several areas, particularly infrastructure network planning, chip verification, mathematical education, and integer optimization. From 2000-2020, he led the efforts on developing Integer Programming Solvers at ZIB, including the SCIP development. From 2008-2014, he was the coordinator of the FORNE project, an industry collaboration project regarding gas transportation involving five universities and two research institutes. The project received the 2016 EURO Excellence in Practice Award of the European OR Society. From 2013-2019, he was head of the GasLab and the SynLab within the Research Campus MODAL. The project Optimized Execution of Dispatching, conducted together with Germany's largest Gas Transmission System Operator, became a finalist of the 2020 INFORMS Innovative Applications in Analytics Award. Currently, the work is focused on developing high-performance methods for solving large-scale structured optimization problems using multi-core CPUs, GPUs, and Quantum computing.

Invited Talk 5:

OFFO algorithms for optimization problems with general constraints. Part I : Convergence and complexity

Serge Gratton
National Polytechnic of Toulouse

Abstract. This work presents a new family of Objective-Function-Free Optimization (OFFO) algorithms for nonlinear problems with equality constraints and nonnegativity bounds. These methods never evaluate the objective function and rely solely on first-order information. They alternate between tangential steps, improving optimality along the linearized constraint manifold, and normal steps, restoring feasibility. The tangential moves stem from adaptive gradient schemes such as AdaGrad, while the feasibility reduction steps follow an OFFO trust-region philosophy. Several variants will be discussed, differing in their step-size adaptation and switching criteria between tangential and normal phases. A complete theoretical analysis of several variant is presented for the equality-constrained case, establishing a global convergence rate of order $(1/\sqrt{k})$, consistent with the best known results for first-order methods. The approach is then extended to the general constrained setting $c(x) = 0, x \geq 0$.

Speaker Biography. Serge Gratton is Professor of Exceptional Class in Applied Mathematics at INP-IRIT (Université de Toulouse, France) and currently serves as Scientific Director of ANITI (Artificial and Natural Intelligence Toulouse Institute), one of the four national French AI Clusters labelled “Cluster IA” in 2024. His research focuses on large-scale numerical optimization and data assimilation, with applications to machine learning, physics-informed AI models, and inverse problems. He has authored more than 120 scientific publications in leading journals and conference proceedings, and serves as Associate Editor for the SIAM Journal on Optimization, Optimization Methods and Software, and the Journal of Computational Mathematics. He has supervised over 25 PhD students and currently coordinates two AI programs at Toulouse University: a specialized Master’s in Artificial Intelligence and a dual engineering degree between INSA and ENSEEIHT. Since 2019, he has held an AI Chair on Machine Learning under Physical Constraints, where he developed recurrent neural architectures for predictive modeling and associated optimization methods. His current research investigates stochastic and objective-function-free optimization techniques for robust AI systems and large-scale constrained learning problems.

Invited Talk 6:

Variance-reduced first-order methods for constrained stochastic and finite-sum optimization

Zhaosong Lu
University of Minnesota

Abstract. We consider stochastic and finite-sum optimization problems with deterministic constraints. Existing methods typically focus on finding an approximate stochastic solution that ensures the expected constraint violations and optimality conditions meet a prescribed accuracy. However, such an approximate solution can potentially lead to significant constraint violations. To address this issue, we propose variance-reduced first-order methods that treat the objective and constraints differently. Under suitable assumptions, our proposed methods achieve stronger approximate stochastic solutions with complexity guarantees that more reliably satisfy the constraints compared to existing methods. This is joint work with Sanyou Mei (HKUST) and Yifeng Xiao (UMN).

Speaker Biography. Zhaosong Lu is a Full Professor in the Department of Industrial and Systems Engineering at the University of Minnesota. He received his Ph.D. in Operations Research from the Georgia Institute of Technology. His research focuses on the theory and algorithms of continuous optimization, with applications in data science and machine learning. Dr. Lu has published extensively in leading journals, and his work has been supported by major funding agencies, including AFOSR, NSF, and ONR. He has served on several prize committees, isuch as the INFORMS George Nicholson Prize Committee and the ICCOPT Best Paper Award Committee. He has also served as an Associate Editor for leading journals, including Mathematics of Operations Research, SIAM Journal on Optimization, Computational Optimization and Applications, and Journal of Global Optimization.

Invited Talk 7:

Smoothing alternating minimization for nonsmooth nonconvex sum-min problems

Marc Teboulle
Tel Aviv University

Abstract. We study a class of nonsmooth, nonconvex optimization problems defined as finite sums of minima of convex functions. A smoothing alternating minimization-based algorithm is proposed and proved to converge globally to critical points of the smoothed problem. As an application, we consider robust clustering with sum-min Euclidean norm objectives and derive simple schemes analogous to k-means. We conclude with a discussion of open theoretical questions, notably the challenge of obtaining convergence guarantees for the original nonsmooth model. Joint work with Shoham Sabach and Sergey Voldman.

Speaker Biography. Marc Teboulle is the former Eric & Sheila Samson Chair of Optimization, and an Emeritus Professor at the School of Mathematical Sciences of Tel Aviv University. He received his D.Sc. from the Technion, Israel Institute of Technology. He has held academic appointments at Dalhousie University and the University of Maryland. He serves/has served on the editorial board of several leading journals and was the Area Editor of Continuous Optimization for Mathematics of Operations Research. His research interests are in the area of continuous optimization, including theory, algorithms, and its applications to many areas of science and engineering. He is a SIAM Fellow and was awarded the Informs 2025 Khachiyan Prize for outstanding lifetime contributions to the field of optimization.

Invited Talk 8:

On the semismoothness of projections in conic optimization

Defeng Sun
The Hong Kong Polytechnic University

Abstract. Conic optimization solving depends critically on strong semismoothness of metric projections for local quadratic convergence of nonsmooth Newton methods. While this holds for the second-order (SOC) cone, the positive semidefinite (PSD) cone, and symmetric cones, it has been open whether it extends to affine slices of the PSD cone. This talk settles the question in both directions: we prove a sharp negative result: for any $p>0$, there exists an affine slice of a PSD cone whose projection fails to be p-order semismooth. The construction proceeds via LMI-representable sets and boundary path estimates, revealing an intrinsic geometric barrier absent in the SOC case. Separately, we give a new, geometrically intuitive proof of strong semismoothness for the PSD cone projection using lift of reduction ideas, clarifying why the property fails for generic affine slices.

Speaker Biography. Fellow of AMS, SIAM, CSIAM and ORSC. Professor Defeng Sun is currently Chair Professor of Applied Optimization and Operations Research at the Hong Kong Polytechnic University and the former President of the Hong Kong Mathematical Society. He mainly publishes in non-convex continuous optimization and machine learning. Together with Professor Kim-Chuan Toh and Dr Liuqin Yang, he was awarded the triennial 2018 Beale-Orchard-Hays Prize for Excellence in Computational Mathematical Programming by the Mathematical Optimization Society. He served as editor-in-chief of Asia-Pacific Journal of Operational Research from 2011 to 2013 and he now serves as associate editor of Mathematical Programming, SIAM Journal on Optimization, Journal of Optimization Theory and Applications, Journal of the Operations Research Society of China, Journal of Computational Mathematics, and Science China: Mathematics. In 2021, he received the Distinguished Collaborator Award from both the Hong Kong Research Center and Huawei Noah's Ark Lab for the contributions on developing efficient and robust techniques for solving huge scale linear programming models arising from production planning and supply chain logistics. In 2022, he received the RGC Senior Research Fellow Scheme award.

Invited Talk 9：

The rank one tensor completion problem

Jiawang Nie
University of California, San Diego

Abstract. We talk about the rank one tensor completion problem. First, for cubic order tensors, we show that this problem is equivalent to a special rank-1 matrix recovery problem. When the tensor is strongly rank-1 completable, it is equivalent to a rank-1 matrix completion problem and it can be solved by an iterative formula. For other cases, we propose both nuclear norm relaxation and moment relaxation methods. Second, when there are noises for observed tensor entries, we propose a robust biquadratic optimization model for obtaining rank-1 completing tensors. When the observed tensor is sufficiently close to be rank one, we show that this biquadratic optimization produces an accurate rank one tensor completion. We give an efficient convex relaxation for solving the biquadratic optimization. Third, we consider the rank one completion problem for tensors of arbitrary orders. The notion of rank one determinable tensors is introduced. We explore its properties and propose an algorithm for completing rank one tensors. The method only requires solving linear systems and computing singular vectors. When there are no noises, it produces a unique rank one completion. When there are noises, we show that the computed rank one tensor completion is close to the exact one when the noise is sufficiently small.

Speaker Biography. Jiawang Nie is a Professor of Mathematics at the University of California, San Diego (UCSD). He works in the field of polynomial optimization, convex algebraic geometry, tensor computations, and applications in data science. He published around 100 papers in various mathematical journals, including Found. Comput. Math., Math. Program., Math. Oper. Res., and SIAM series journals. He is a recipient of Tucker Prize Finalist, NSF CAREER Award, INFORMS Young Scholar in Optimization, SIAM SIAG/LA Best paper prize, Feng Kang Prize, AMS Fellow and SIAM Fellow.

Invited Talk 10:

Optimization for large language model pre-training: new algorithms, theory, and insights

Mingyi Hong
University of Minnesota

Abstract. Pre-training large language models (LLMs) has become one of the most resource-intensive computational tasks of our time, demanding enormous amounts of compute, memory, and energy. At its core lies a deceptively simple, yet notoriously difficult, nonconvex stochastic optimization problem, whose practical performance depends heavily on the choice of optimizer. Although adaptive optimizers such as Adam have been the de facto standard, a number of fundamental questions remain unresolved: How much memory overhead is truly necessary Why does plain stochastic gradient descent (SGD) perform so poorly in this regime? And can classical acceleration ideas, such as Nesterov's momentum, be made to work reliably for modern neural architectures In this talk, I will present a series of recent works that address these questions through a combination of empirical analysis, theoretical study, and algorithm design. First, I will discuss SCALE (Stochastic Column-normAlized Last-layer momEntum), a minimalist optimizer that is built upon SGD that matches or exceeds the performance of Adam while using only 35-45% of its memory footprint, by combining column-wise gradient normalization with momentum applied only at the output layer. Second, I will examine why SGD struggles in LLM pre-training and identify two key properties of the stochastic gradients: (1) a disproportionately large weight-to-gradient norm ratio that grows with the batch size, and (2) a severe per-token-class disparity at the output layer, that together restrict SGD's admissible learning rate. We then show that simple clipping mechanisms exploit this understanding to close most of the gap to Adam. Third, I will introduce EMA-Nesterov, an exponential moving-average variant of Nesterov's lookahead that stabilizes acceleration, retains the classical accelerated convergence rate in the convex regime, and consistently improves modern optimizers (Adam, SOAP, Muon) across language-model pre-training benchmarks. Taken together, these works offer a fresh perspective on optimizer design for large-scale neural network training, and point toward a number of open research questions at the interface of optimization theory and modern machine learning.

Speaker Biography. Mingyi Hong is a Professor in the Department of Electrical and Computer Engineering at the University of Minnesota, Minneapolis. His research has been focused on developing optimization theory and algorithms for applications in signal processing, machine learning and foundation models. His work has received two IEEE Signal Processing Society (SPS) Best Paper Awards (2021, 2022), an International Consortium of Chinese Mathematicians Best Paper Award (2020), among others. He is an Amazon Scholar, and he is the recipient of the 2022 Pierre-Simon Laplace Early Career Technical Achievement Award from IEEE, and the 2025 Egon Balas Prize from INFORMS Optimization Society. He is a Fellow of IEEE.

Invited Talk 11:

On correctness of numerical solvers in mixed-integer optimization

Ambros Gleixner
HTW Berlin and Zuse Institute Berlin (ZIB)

Abstract. Over the last decades, mixed-integer programming solvers have developed into highly successful and versatile tools for tackling a wide range of challenging optimization problems in operations research and beyond. As a result, a large and growing body of computational research in academia and industry today relies on the performance and results of black-box MIP solvers. However, ensuring the correctness of solver implementations and their results becomes a challenging task not only due to the interplay of many algorithmic components of a branch-and-cut solver, but also due to the ubiquitous use of limited-precision floating-point arithmetic. In this talk we will discuss recent advances in this regard and highlight three contributions that try to improve the correctness of MIP solvers in different aspects: delta-debugging as a tool to more easily pinpoint systematic implementation errors, the use of hybrid-precision arithmetic for building numerically exact linear and mixed-integer solvers, and the construction and verification of solver-independent branch-and-cut certificates.

Speaker Biography. Ambros Gleixner is a professor of discrete mathematics and operations research at HTW Berlin and an affiliated researcher in the Mathematical Algorithmic Intelligence division at the Zuse Institute Berlin. His research focuses on mixed-integer linear and nonlinear optimization, with particular emphasis on the development of efficient, numerically reliable, and verifiable optimization algorithms. He has made significant contributions to several major open-source optimization solvers, including the MINLP solver SCIP and the LP solver SoPlex, and is widely recognized for his work on exact mixed-integer programming and computational optimization.

Invited Talk 12:

Singleton optimality and DNN exactness of random StQPs

Xin Chen
Georgia Institute of Technology

Abstract. Standard quadratic programming over the simplex (StQP) is a compact nonconvex model with deep links to copositive optimization and continuous reformulations of discrete problems. This talk presents two recent results on independent random StQPs. For a Gaussian Orthogonal Ensemble objective matrix, we prove the optimizer is almost always the minimum-diagonal vertex, more precisely with probability $\sim 1-2\sqrt{2\pi \log n}/n$ for n-dimensional StQPs. The second part studies the doubly nonnegative relaxation of the same random model. In the GOE case, the relaxation is exact and has a unique rank-one optimizer with probability at least $1-K(\log n)^2/n^3$. Together, the results show that random GOE StQPs exhibit singleton primal structure and high-probability DNN exactness, despite the nonconvexity of the deterministic problem.

Speaker Biography. Xin Chen is a James C. Edenfield chair and professor in the H. Milton Stewart School of Industrial and Systems Engineering at Georgia Tech. Prior to this appointment, he was a professor of industrial engineering at the University of Illinois at Urbana-Champaign. His research interest lies in optimization, data analytics, revenue management and supply chain management. He received the Informs revenue management and pricing section prize in 2009. He is the coauthor of the book "The Logic of Logistics: Theory, Algorithms, and Applications for Logistics and Supply Chain Management (Second Edition, 2005, & Third Edition, 2014)", and serving as the department editor of logistics and supply chain management of Naval Research Logistics and an associate editor of several leading journals including Operations Research, Management Science, and Production and Operations Management.

Invited Talk 13:

Exploiting variable implications in presolve for mixed integer programming

Wei-Kun Chen
Beijing Institute of Technology

Abstract. Presolve for mixed integer programming (MIP) problems aims to eliminate redundant information, strengthen the formulation, and extract useful structural information for the subsequent branch-and-cut process. An important type of such structural information is the variable implications (VIs), which describe how a bound on a variable depends on a bound of a binary variable. In this talk, we develop two new presolve techniques that exploit VIs to derive reductions for MIP problems. The first technique, called VI aggregation, aggregates multiple VIs into a single inequality by using implications between a variable and a set of binary variables that form a clique. This aggregation can reduce the number of constraints and tighten the linear programming relaxation. The second technique, called VI-aware linear constraint propagation (LCP), builds on the standard LCP but incorporates VIs associated with the variable being tightened to derive more reductions, and can derive tighter variable bounds. We show that although VI information is additionally considered, the tightest lower or upper bound of a variable can still be derived in linear time. Moreover, compared with a state-of-the-art approach in the literature, the proposed VI-aware LCP can derive tighter variable bounds. Computational results on MIPLIB 2017 benchmark instances demonstrate the effectiveness of VI aggregation and VI-aware LCP in improving the performance of the open-source MIP solver HiGHS. In particular, using the two proposed presolve techniques, a reduction of 4% in solving time and 6% in node number on HiGHS can be achieved.

Speaker Biography. Wei-Kun Chen received the B.Sc. degree in information and computing science from Sun Yat-sen University, China, in 2014, and the Ph.D. degree in computational mathematics from the Chinese Academy of Sciences (CAS), Beijing, China, in 2019. In 2019, he joined the School of Mathematics and Statistics, Beijing Institute of Technology, where he is currently an Associate Professor. His research interests include mixed integer programming and its applications to supply chain management and wireless communications. His work has been published in top-tier journals such as SIOPT, IJOC, EJOR, TOMS, IEEE TSP, JSAC, and TNSM. He currently serves as an Associate Editor of Operations Research Forum and a Guest Editor of Journal of Global Optimization.

Invited Talk 14:

Localization of wireless sensor networks: algorithms and theory

Shoham Sabach
Cornell University

Abstract. Wireless sensor network localization is a fundamental problem that lies at the intersection of optimization, geometry, and signal processing. Given noisy pairwise distance or time-based measurements between sensors, the goal is to recover their unknown positions, often under uncertainty and nonconvex constraints. In this talk, I will present recent works that develop efficient and theoretically grounded algorithms for large-scale localization problems. Beyond algorithmic advances, we also analyze the optimization landscape of localization and multidimensional scaling problems, establishing conditions for escaping saddle points, and characterizing local minima. This talk is based on joint work with Eyal Gur.

Speaker Biography. Dr. Shoham Sabach is an Associate Professor at the School of Operations Research and Information Engineering at Cornell University and has served as an Amazon Scholar at Amazon Research, US, from 2022 to 2025. He earned his Ph.D. in 2012 from the Technion, Israel Institute of Technology. His research broadly focuses on optimization theory and algorithms, with an emphasis on linking optimization to applications in science and engineering. Dr. Sabach serves on the editorial boards of several journals, including the Mathematics of Operations Research and Mathematical Programming. He received, together with J. Bolte and M. Teboulle, the 2017 SIAM Optimization Prize for the best paper on optimization published between 2014 and 2017.

Invited Talk 15:

A modern optimization view of the power method

Yong Xia
Beihang University

Abstract. The computation of the dominant eigenpair for symmetric positive semidefinite matrices is fundamental in numerical optimization. This work shifts the paradigm from the classical Rayleigh quotient to an unconstrained difference formulation, whose global optimum recovers the dominant eigenpair. Within this framework, we prove that gradient descent with a constant step-size $\alpha \in (0,1)$ converges almost surely to the global optimum at a local linear rate. This analysis thereby reinterprets the classical power method as the conservative special case $\alpha = 1/2$ and rigorously establishes its asymptotic sub-optimality. To advance this first-order scheme, we propose the Split-Merge algorithm based on the majorization-minimization principle. After splitting the matrix, we introduce auxiliary vectors to effectively merge the decomposition factors, resulting in a matrix-free and parameter-free iteration that captures tighter curvature information. We establish that SplitMerge converges almost surely to a global minimizer, and show that the iteration exhibits a spectral peeling mechanism that suppresses the targeted eigenspace, potentially surpassing the static linear rate of power iterations. Numerical evaluations across synthetic and real-world datasets confirm that our method has scalable efficiency, achieving speed-ups exceeding 10×over the power method, with performance comparable to subspace iterations.

Speaker Biography. Prof. Yong Xia is currently a professor at Beihang University, having previously served as Vice Dean of the School of Mathematical Sciences. He earned his B.S. from Peking University in 2002 and his Ph.D. from the Chinese Academy of Sciences in 2007 under the supervision of Prof. Ya-xiang Yuan. He has authored over 100 papers published in top-tier venues such as MP, SIOPT, ICML, and NeurIPS. His editorial service includes boards of JORSC and COT. He was awarded the National Science Fund for Excellent Young Scholars in 2018 and received the MMOR Best Paper Award in 2023. In 2025, he was a recipient (Rank 2) of the Natural Science Award (Second Class) from the Ministry of Education. He is renowned for the internationally recognized **Xia-Yuan Linearization** model for the Quadratic Assignment Problem, whose relaxed formulation is known as the **Xia-Yuan bound**.

Invited Talk 16:

Stochastic auto-conditioned fast gradient methods with optimal rates

Guanghui (George) Lan
Georgia Institute of Technology

Abstract. Achieving optimal convergence rates for stochastic composite convex optimization without prior knowledge of problem parameters remains a central challenge. In the deterministic setting, the auto-conditioned fast gradient method has recently been proposed to attain optimal accelerated rates without line-search procedures or prior knowledge of the Lipschitz smoothness constant, providing a natural prototype for parameter-free acceleration. However, extending this approach to the stochastic setting has proven technically challenging and remains open. Existing parameter-free stochastic methods either fail to achieve accelerated rates or rely on restrictive assumptions, such as bounded domains, bounded gradients, prior knowledge of the iteration horizon, or strictly sub-Gaussian noise. To address these limitations, we propose a stochastic variant of the auto-conditioned fast gradient method, referred to as stochastic AC-FGM. The proposed method is fully adaptive to the Lipschitz constant, the iteration horizon, and the noise level, enabling both adaptive stepsize selection and adaptive mini-batch sizing without line-search procedures. Under standard bounded conditional variance assumptions, we show that stochastic AC-FGM achieves the optimal iteration and sample complexities.

Speaker Biography. Guanghui (George) Lan is an A. Russell Chandler III Chair and a professor in the H. Milton Stewart School of Industrial and Systems Engineering at the Georgia Institute of Technology. Prior to returning to Georgia Tech, where he earned his Ph.D. in August 2009, Dr. Lan served on the faculty of the Department of Industrial and Systems Engineering at the University of Florida from 2009 to 2015. His primary research interests lie in optimization, machine learning, and reinforcement learning, with applications in sustainability and healthcare. His academic honors include the INFORMS Frederick W. Lanchester Prize (2023), the INFORMS Computing Society Prize (2022), the National Science Foundation CAREER Award (2013), First Place in the INFORMS Junior Faculty Interest Group Paper Competition (2012), and recognition as a finalist for the Mathematical Optimization Society Tucker Prize (2012). Dr. Lan serves as an area editor for Mathematics of Operations Research, and an associate editor for Mathematical Programming, SIAM Journal on Optimization, and Operations Research, among others leading journals.

Invited Talk 17:

Distributionally robust universal classification: bypassing the curse of dimensionality

Weijun Xie
Georgia Institute of Technology

Abstract. The Universal Classification (UC) problem seeks an optimal classifier from a universal policy space to minimize the expected 0-1 loss, also known as the misclassification risk. However, the conventional empirical risk minimization often leads to overfitting and poor out-of-sample performance. To address this limitation, we introduce the Distributionally Robust Universal Classification (DRUC) formulation, which incorporates distributional robustness via the Wasserstein distance centered at the empirical distribution. To manage the infinite-dimensional nature of the DRUC policy space, we develop its in-sample DRUC counterpart, which allows for a more tractable reformulation while preserving robustness properties. We prove that, asymptotically, the in-sample DRUC formulation converges to the original UC formulation and is equivalent to the DRUC formulation. Under mild conditions, we provide non-asymptotic finite-sample performance guarantees. Furthermore, we derive a mixed-integer linear programming (MILP) reformulation to obtain the optimal in-sample DRUC policy and propose an efficient 2-approximation algorithm. Our numerical experiments show the efficiency of the proposed approximation algorithm and demonstrate the superior out-of-sample performance of the in-sample DRUC formulation.

Speaker Biography. Dr. Weijun Xie is an Associate Professor in the H. Milton Stewart School of Industrial and Systems Engineering at the Georgia Institute of Technology. His research focuses on mixed-integer optimization, stochastic optimization, and data-driven decision-making, with applications in machine learning, logistics, and energy systems. His work has been recognized with multiple awards, including the 2021 NSF CAREER Award, the 2025 INFORMS Freight Transportation and Logistics SIG Award, an Honorable Mention for the 2025 INFORMS Computing Society Prize, and the 2020 INFORMS Young Researchers Paper Prize. He currently serves as an Associate Editor for Operations Research, Mathematical Programming, Manufacturing & Service Operations Management, Naval Research Logistics, and the Journal of Global Optimization.

Invited Talk 18:

Optimization for neural networks: Global landscapes and local structures

Ruoyu Sun
The Chinese University of Hong Kong, Shenzhen

Abstract. Modern deep neural networks can be trained relatively well by some optimization algorithms, despite their complicated formulations. This raises basic questions for optimization: Why are these problems not as intractable as generic nonconvex problems? What structures shape the behavior of training algorithms and the choice among them? In this talk, we will discuss these questions from two complementary views. The first is a global landscape view. We will discuss local minima and related geometric structures, with an emphasis on how width, regularization, and symmetry affect the loss landscape. We will briefly discuss its implication on training small networks, generative adversarial networks and learning rate schedules. The second is a local optimization view, focusing on convergence to stationary points and acceleration. We will discuss generic convergence analysis for common training algorithms, and structural properties of neural network optimization, especially the approximate block-diagonal structure of the Hessian and the spectral properties of neural networks. These structural properties help explain algorithmic behavior and motivates more efficient optimization methods. We will conclude by discussing how global and local views may be combined toward a more unified optimization foundation.

Speaker Biography. Ruoyu Sun is an associate professor in the School of Data Science, The Chinese University of Hong Kong, Shenzhen, and affiliated with Shenzhen International Center for Industrial and Applied Mathematics, and Shenzhen Institute of Big Data. He worked as aan assistant professor at University of Illinois Urbana-Champaign (UIUC), a visiting research scientist at Meta AI (formerly Facebook AI Research), and was a postdoctoral researcher at Stanford University. His current research interests lie in machine learning and optimization, including algorithms and theory for neural networks (especially large language models, LLMs), non-convex optimization, learning to optimize, and LLMs for networks.

Invited Talk 19:

A geometric perspective on polynomially solvable convex maximization

Shaoning Han
National University of Singapore

Abstract. Convex maximization encompasses a broad class of optimization problems and is generally NP-hard. While polynomial solvability has been established for several important special cases, a broader structural understanding for mixed-integer settings remains limited. In this talk, we study this question from a geometric perspective and identify a structural property of the feasible region underlying tractability, which we term comonotonicity. Under comonotonicity and mild additional conditions, we develop a unified enumerative framework showing that fixed-rank convex maximization is polynomially solvable. This viewpoint recovers known results such as convex matroid maximization and also covers mixed-integer applications that previously required separate analyses. Beyond its theoretical significance, this finding also offers useful insights for algorithmic development.

Speaker Biography. Shaoning Han is an assistant professor in the Department of Mathematics and the Institute of Operations Research and Analytics at National University of Singapore. Before that, He obtained his Ph.D. in Industrial Engineering at the University of Southern California in 2022, where he subsequently worked as a postdoctoral researcher in the same department. He is a cowinner of the 2025 INFORMS Computing Society Prize.

Invited Talk 20：

Powell, Yuan--Stoer, and optimist

Zaikun Zhang
Sun Yat-sen University

Abstract. This talk consists of three parts. We first introduce PRIMA, our project on modernizing Powell's derivative-free optimization software. It provides the modern reference implementation of Powell's renowned derivative-free optimization methods, namely COBYLA, UOBYQA, NEWUOA, BOBYQA, and LINCOA. The focus is to implement these methods in a structured and modularized way so that they are understandable, maintainable, extendable, fault-tolerant, and future-proof. We will introduce the current status of the project, elaborate the challenges we have encountered, and discuss future developments. The second part re-introduces a derivative-free subspace framework for unconstrained optimization originating from Chapter 5 the thesis [Z. Zhang, On Derivative-Free Optimization Methods, PhD thesis, Chinese Academy of Sciences, Beijing, 2012] of the author under the supervision of Ya-xiang Yuan. At each iteration, the framework defines a (low-dimensional) subspace based on an approximate gradient, and then solves a subproblem in this subspace to generate a new iterate. In the default setting, the subspace is a derivative-free version of a subspace proposed by Yuan and Stoer in 1992 based on the conjugate gradient method, and the subproblem is solved by Powell's NEWUOA method, leading to an algorithm called NEWAUOs, which has been applied by Intel to designing chips including Atom P5900. The third part discusses the extension of the subspace framework to constrained optimization. We propose a new subspace framework called Optimist, and present preliminary results on its theory and practice.

Speaker Biography. Zaikun Zhang is a professor at the School of Mathematics, Sun Yat-sen University. He earned his Bachelor's degree in 2007 from Jilin University and PhD degree (supervised by Prof. Ya-xiang Yuan) in 2012 from the Chinese Academy of Sciences. His research interests include derivative-free (zeroth-order) optimization, optimization based on inaccurate information, and randomized methods. He received the COAP Best Paper Award in 2020 (with Clément W. Royer, Serge Gratton, and Luis N. Vicente), the NSFC Excellent Young Scientists Fund (Overseas) in 2023, and the ORSC Award for Applications of Operations Research (with Tom M. Ragonneau, Haitian Li, and Cunxin Huang) in 2024. He is an editorial board member of the Journal of Scientific Computing.

Poster List

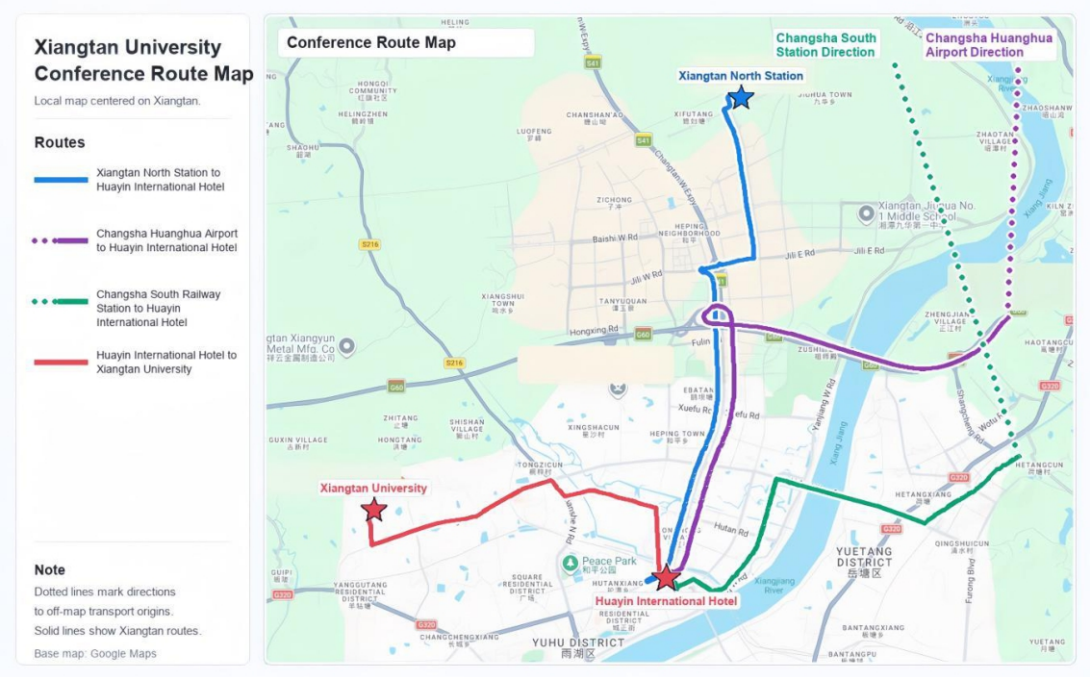
June 27, 2026, 16:30-19:00	1st Floor Lobby, School of Mathematics and Computational Science, XTU
June 28, 2026, 16:30-18:30	Multi-function Hall (2nd Floor), Huayin International Hotel
A01	**Xindong Tang** (Hong Kong Baptist University) A characterization for tightness of the sparse Moment-SOS hierarchy
A02	**Chang He** (Shanghai University of Finance and Economics) New results on the Polyak stepsize
A03	**Xinhui Xiong** (AMSS, Chinese Academy of Sciences) A second-order method landing on the Stiefel manifold via Newton–Schulz iteration
A04	**Zhou Wei** (Hebei University) Outer approximation algorithms for MINLP problems
A05	**Xiaoyu Wang** (University of Chinese Academy of Sciences) Fully first-order methods for decentralized bilevel optimization
A06	**Maoran Wang** (Nanjing Normal University) S-D-RSM: Stochastic distributed regularized splitting method for large-scale convex optimization problems
A07	**Yuxuan Duan** (Beijing Jiaotong University) Internet traffic data recovery under structured missing patterns via low transformed tubal rank optimization method
A08	**Yu-Qi Guo** (Beijing Institute of Technology) Benders decomposition for the minisum multipurpose trip location problem
A09	**Yuyang Wang** (AMSS, Chinese Academy of Sciences) Momentum stability and adaptive control in stochastic reconfiguration
A10	**Yang You** (Nanjing Normal University) Distributionally robust SDDP: New algorithms, termination criterion and complexity analysis
A11	**Lu Zhang** (National University of Defense Technology) Nonlinear preconditioned primal-dual method with projection for nonconvex-nonconcave minimax problems
A12	**Zhou Xiao** (Beijing Institute of Technology) A polyhedral study of frustration index problems
A13	**Mengli Ye** (Southwest Petroleum University) Existence and uniqueness of solutions to a class of strongly monotone differential variational inequalities on Hadamard manifolds
A14	**Yixi Ding** (AMSS, Chinese Academy of Sciences) Deterministic oracle complexity of computing approximate stationary points in nonsmooth nonconvex optimization with constraints

June 27, 2026, 16:30-19:00	1st Floor Lobby, School of Mathematics and Computational Science, XTU
June 28, 2026, 16:30-18:30	Multi-function Hall (2nd Floor), Huayin International Hotel
B01	**Wen Yang** (Southwest Petroleum University) Research on dynamic ideal point grey wolf optimization algorithm for stochastic multi-objective optimization
B02	**Wenhao Fu** (Suzhou University of Science and Technology) A semismooth Newton method for an unconstrained reformulation of stabilized SQP subproblems
B03	**Jian Chen** (Sichuan University) A subspace proximal-Newton method for composite optimization problems with linear operators
B04	**Hao Wu** (Nanjing University of Aeronautics and Astronautics) A unified algorithm for nonconvex decentralized nonlinear optimization
B05	**Zelong Jin** (AMSS, Chinese Academy of Sciences) Stochastic trust-region method for minimax optimization
B06	**Xiaoyu Li** (Beijing Jiaotong University) Learning fused row-sparse structures via Newton methods for linear matrix equations
B07	**Yuntian Jiang** (Shanghai University of Finance and Economics) Accelerating trust-region methods: An attempt to balance global and local efficiency
B08	**Yun Zeng** (Beihang University) Randomized conjugate gradient least squares
B09	**Lianghai Xiao** (Jinan University) A proximal safeguarded augmented Lagrangian method for binary orthogonal optimization
B10	**Ke-Ni Xiang** (Beijing Institute of Technology) A dive-and-fix approach for large-scale pooling problems
B11	**Shengyu Sun** (AMSS, Chinese Academy of Sciences) A multiscale primal-dual interior-point relaxation method for large-scale optimal transport problems
B12	**Feihu Huang** (Nanjing University of Aeronautics and Astronautics) LiMuon: Light and fast muon optimizer for large models
B13	**Boyang Zhang** (AMSS, Chinese Academy of Sciences) Proximal-based generative modeling for Bayesian inverse problems
B14	**Runze You** (The Chinese University of Hong Kong, Shenzhen) FedSUM family: Efficient federated learning under arbitrary client participation

June 27, 2026, 16:30-19:00	1st Floor Lobby, School of Mathematics and Computational Science, XTU
June 28, 2026, 16:30-18:30	Multi-function Hall (2nd Floor), Huayin International Hotel
C01	**Keyan Li** (Beijing Institute of Technology) Aggregation-enhanced valid inequalities for mixed-binary nonlinear sets with GUB constraints
C02	**Yi Yang** (Xiangtan University) Distributionally robust shortfall risk portfolio model with moment ambiguity sets
C03	**Kehan Zhu** (Beijing University of Posts and Telecommunications) From the blending inverse problem to minimax modeling for deblending
C04	**Minglu Li** (University of Electronic Science and Technology of China) Self-emergent field-zero singularities in gradient-based phase-only beam shaping
C05	**Mingyang Luo** (National Center for Applied Mathematics in Chongqing) An adaptively constrained sequential quadratic programming method for safety-critical nonlinear model predictive control
C06	**Wen Jiang** (Chongqing Normal University) A fast multi-objective gradient flow method with implicit Hessian-driven damping
C07	**Wei Hu** (AMSS, Chinese Academy of Sciences) Distributed gradient-regularized Newton method: Scheduled consensus and $\mathcal{O}(\varepsilon^{-1})$ global iteration complexity
C08	**Peng Wang** (University of Macau) Loss landscape and error-bound analysis for regularized deep linear networks
C09	**Kangkang Deng** (National University of Defense Technology) Rethinking manifold augmented Lagrangian methods with constant penalty parameters
C10	**Sijia Xia** (Central China Normal University) Sparse Tucker decomposition with graph regularization for high-dimensional VAR models
C11	**Jinling Zhou** (Xiangtan University) The rank-1 completion problem for cubic tensors
C12	**Jie Wang** (AMSS, Chinese Academy of Sciences) Scalable ground-state certification of quantum spin systems via structured noncommutative polynomial optimization
C13	**Ruoyu Diao** (AMSS, Chinese Academy of Sciences) A sequential LCP method for generalized Nash equilibrium problems
C14	**Jiangweizhi Peng** (University of Minnesota) HiPER: Hierarchical reinforcement learning with explicit credit assignment for large language model agents
C15	**Kunjing Yang** (Hunan University) A coarse-to-fine hybrid registration and fusion framework for hyperspectral super-resolution via batch image alignment

Transportation and Weather

Workshop Site: Xiangtian Univeristy and Huayin International Hotel, Xiangtan City, Hunan Province



Route Recommendations

1. Xiangtan Railway Station → Huayin International Hotel

Distance: approx. 2.3 km
Taxi: approx. ¥9, about 7 minutes.
Public transport: take Bus Line 19 towards Banbian Street. Fare: approx. ¥3; travel time: about 30 minutes.

2. Xiangtan North Railway Station → Huayin International Hotel

Distance: approx. 13.6 km
Taxi: approx. ¥35, about 20 minutes.
Public transport: take Bus Line K2 towards Jianshe Lukou. Fare: approx. ¥3; travel time: about 40 minutes.

3. Changsha Huanghua International Airport → Huayin International Hotel

Distance: approx. 64 km
Taxi: approx. ¥150, about 57 minutes.
Public transport: take Metro Line 6 towards Xiejiaqiao and get off at Renmin East Road Station. Transfer to Metro Line 2 towards Meixihu West and get off at Changsha Railway Station. Then take an intercity train to Xiangtan Railway Station. Total fare: approx. ¥17; total travel time: about 2 hours 10 minutes.

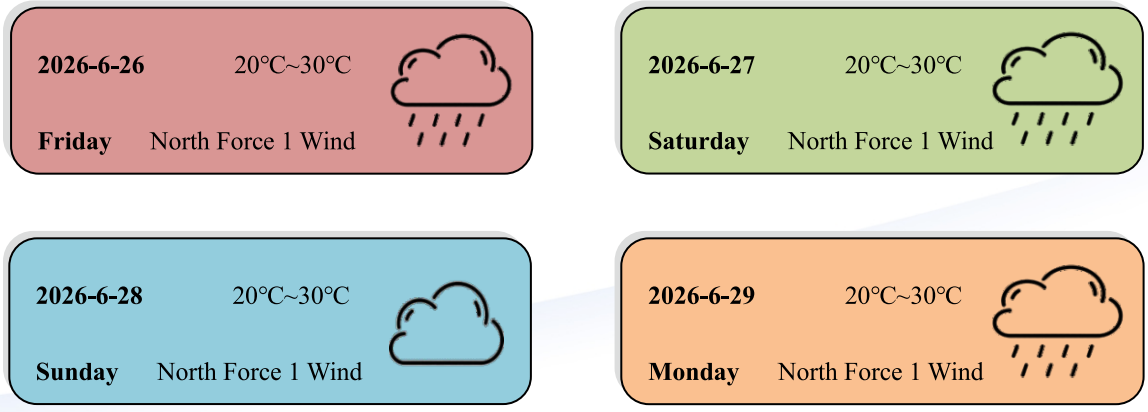
4. Huayin International Hotel → Xiangtan University

Distance: approx. 9.7 km
Taxi: approx. ¥22, about 19 minutes.
Public transport: take Bus Line 28 towards Hexi Bus Terminal, then transfer to Bus Line 6 towards Xiangtan University. Total fare: approx. ¥4; total travel time: about 55 minutes.

5. Changsha South Railway Station → Huayin International Hotel

Distance: approx. 52 km
Taxi: approx. ¥120, about 55 minutes.
Public transport: take a high-speed train from Changsha South Railway Station to Xiangtan North Railway Station, about 14 minutes and approx. ¥12, then take a taxi to Huayin International Hotel. Total fare: approx. ¥42; total travel time: about 35 minutes.

Weather Forecast



Academy of Mathematics and Systems Science (AMSS)
Chinese Academy of Sciences (CAS)

AMSS was founded in December 1998, by merging the Institute of Mathematics, Institute of Applied Mathematics, Institute of Systems Science, and Institute of Computational Mathematics and Scientific/Engineering Computing of CAS. Its history can be traced back to the founding of the Institute of Mathematics of CAS in 1952.

CAS is the top academic research organization of P. R. China. This defines the mission of the AMSS: pursuing fundamental research of highest level on mathematical sciences and their applications and related interdisciplinary study; high level training in mathematical sciences; providing consulting reports to the authorities on certain issues related to mathematical sciences and their applications; playing a leading role in advanced study of mathematics in China; and becoming a mathematical research center of global influence.

The AMSS is the largest, strongest and the most influential research institution in mathematical science in China. Its research areas are comprehensive, ranging from mathematics, statistics, systems science, management science, computer science. Now AMSS is dynamic in following subjects: number theory, algebra, geometry and topology, analysis and mathematical physics, scientific computing, probability and statistics, systems and control, operations research and management science, and computer mathematics. Currently AMSS has 300 faculty members, including 118 professors (15 are academicians), 81 associate professors, and 27 assistant professors.

Xiangtan University (XTU)

Xiangtan University (XTU) is a comprehensive university selected in the Double First-Class University list, which was founded in accordance with Chairman Mao Zedong's initiative in 1958. On September 10, 1958, Chairman Mao Zedong inscribed the Chinese characters of Xiangtan University and told its faculty members to "do their best to make it an outstanding university". In 1974, Deng Xiaoping, Li Xiannian, and other national leaders approved the resumption of its academic activities. In 1978, the State Council designated XTU as one of the 16 comprehensive National Key Universities in China. In 1981, it became one of the first universities qualified to confer master's degree. Since then, Hua Guofeng, Jiang Zemin, Li Peng and other national leaders have successively visited, showing great care and support for XTU. On September 6, 2018, General Secretary Xi Jinping made an important instruction that he wished Xiangtan University to be much better and characterized as a university located in the hometown of Chairman Mao Zedong. In February 2022, XTU was selected in the Double First-Class University list.

XTU has been steadily developing to obtain more scientific achievements since its foundation. It was selected in the Double First-Class University list and jointly supported by the People's Government of Hunan Province, the Ministry of Education and the State Administration of Science, Technology and Industry for National Defence. It was also one of the few Chinese universities listed in The, USNEWS, and other famous world university rankings at the same time.

XTU has a graduate school, 24 colleges/teaching departments, offering 10 major disciplines: philosophy, economics, law, education, literature, history, science, engineering, management and arts. The Mathematical discipline is listed in the world's First-Class Disciplines project. The disciplines of chemistry, materials science, engineering, mathematics, computer science, environment/ecology, and physics are among the world's top 1% according to the Essential Science Indicators (ESI). Altogether Xiangtan University boasts a world first-class discipline, three national key disciplines, one world First-Class cultivation discipline, and 13 provincial key disciplines under Hunan's 14th Five-Year Plan. The university also holds 18 first-level disciplines authorized to confer a doctor's degree, 33

first-level disciplines authorized to confer a master's degree, 22 professional master's programs, 16 post-doctoral research centers. It also has 41 national-level and 15 provincial-level First-Class Undergraduate Programs, 11 national-level and 23 provincial-level Characteristic Majors, 1 national-level and 8 provincial-level Comprehensive Reform Pilot Majors, and 13 majors were accredited by the China Engineering Education Accreditation Association.

XTU has a National Applied Mathematics Center, a National Base for International Science and Technology Cooperation, 2 National-Local United Engineering Laboratories, a National-Local United Engineering Research Center, 3 Key Research Bases for Humanities and Social Sciences under the Ministry of Education, two Registered Centers for International and Regional Studies under the Ministry of Education, a Research Base for Innovation and Development of Red Tourism under the Ministry of Culture and Tourism, 3 Key Laboratories of the Ministry of Education, 2 Engineering Research Centers of the Ministry of Education, 1 Collaborative Innovation Center supported by the Ministry of Education and Hunan Province, 3 Hunan 2011 Collaborative Innovation Centers, 2 Hunan Provincial Professional and Characteristic Think Tanks, 15 Provincial Key Research Centers in Philosophy and Social Sciences, one Provincial Key Laboratory in Philosophy and Social Sciences, and one Provincial-Level Center for International and Regional Studies. It also has 4 innovative teams of the Ministry of Education, 5 innovative research groups supported by Hunan Natural Science Fund, 3 innovation teams for Huxiang Preeminent Talents Gathering Program, 10 scientific and technological innovation teams from universities in Hunan Province. XTU is one of the first universities being honored as National Experimental Institution for Collaborative Application of Patents, National Intellectual Property Service Center in Universities, Hunan Provincial Base for Transforming Scientific and Technological Achievements and Facilitating Technology Transfer, Hunan Provincial Intellectual Property Center in Universities.

The university currently has 2,079 full-time faculty members, among which 89% hold senior professional titles or doctoral degrees, and 19% have overseas study or research

experience. At present, 52 faculty members are selected for National High-level Talent Programs or hold equivalent honors, and 199 have been selected for Provincial High-level Talent Programs or recognized at a comparable level.

In recent years, XTU has obtained remarkable achievements in applying for national projects. The amount of funds received from the National Social Science Foundation of China ranked about 40th among all universities in China. Three academic works have been included in the "National Achievements Library of Philosophy and Social Sciences". According to statistics from Renmin University of China, the Amount of Cited and Reprinted Articles and Composite Index of Social Science Papers of XTU ranked top 3% nationwide. There are 7 think tanks of XTU selected in the China Think Tank Index (CTTI). XTU has achieved more than 120 awards including the National Natural Science Award, the National Science and Technology Progress Award, the Ministry of Education's Outstanding Scientific Research Achievement Award for Higher Education Institutions, the Hunan Provincial Science and Technology Award, and the Hunan Provincial Outstanding Achievement Award in social sciences. XTU has established high-level industry-academia-research platforms such as Academician Workstations and Innovation Research Institutes. Over the past five years, it has signed more than 1,600 industry-academia-research collaboration projects and been granted 3,039 patents.

XTU has a total of 44,000 enrolled full-time students, including 11,000 graduate students and doctoral students. It offers a Base for Top Students in Basic Disciplines Training Program 2.0 of the Ministry of Education, National Training Base for Outstanding Legal Elites, National Pilot Zone for Innovative Teaching Methods, a National Great Ideological Education Practical Teaching Base, 3 National Teaching Experiment and Demonstration Centers, and National Cultural and Moral Education Base for College Students. The university is also recognized as an implementing institution for the National Undergraduate Innovative Experiment Program, a participating unit of the National Youth Talent Program, a national-level innovation and entrepreneurship college construction unit, one of the first National Model Universities for Deepening Innovation and Entrepreneurship Education Reform, a National Exemplary University for Innovation and Entrepreneurship, and a National Model University for Graduate Employment. Since its founding, Xiangtan University has more than 490,000 alumni, many of whom have made significant contributions to national development and social progress.

Lofty is the peak of Shaoshan, enduring is the flow of the Xiang. Under the guidance of the Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, XTU will implement the spirit of general secretary Xi's important instructions, promote the Xiangtan University spirit of "remembering instructions, striving through hardship, and pursuing excellence.". As a university located in the hometown of Chairman Mao Zedong, XTU will be a socialist university with Chinese characteristics, accelerate the Double First-Class construction, and make greater contribution in realizing the Chinese dream of national rejuvenation.

School of Mathematics and Computational Science

Xiangtan University (XTU)

The School of Mathematics and Computational Science, one of the earliest departments established in Xiangtan University, started as Mathematics and Computational Mathematics established at the beginning of Xiangtan University's resumption in 1974. The Department of Mathematics and Physics was established in 1976, renamed as Department of Mathematics in 1981, and the School of Mathematics and Computational Science was officially established in 2003. At present, there are five departments in the school, namely, Department of Mathematics and Applied Mathematics, Department of Information and Computational Science, Department of Statistics, Department of Data Science & Big Data Technology, and Department of Advanced Mathematics Teaching. The school is an advanced organization in the national education system. In February 2022, the Mathematics Discipline was selected and became the national "Double First-class" discipline.

The school currently has over 110 full-time faculty members, including leaders in the "Ten Thousand Talents Program", recipients of the National Science Fund for Distinguished Young Scholars, participants in the "New Century Millions of Talents Project" at the national level, selected individuals in the Ministry of Education's "Outstanding Talents Support Program for Crossing (New) Centuries", experts enjoying special allowances from the State Council, teaching excellence awardees in Hunan Province, participants in the Hundred Talents Program and Furong Scholars Program in Hunan Province, innovation teams for Huxiang (Hunan) Preeminent Team Program, recipients of Hunan Science Fund for Distinguished Young Scholars and Excellent Young Scholars. More than 30 faculty members have been recognized under national and provincial talent programs. The school has established several exemplary teaching and research teams, including the "National University Huang Danian-Style Teacher Team", the national-level teaching team in "Computational Mathematics", and the Ministry of Education's innovative team in "Numerical Methods for Differential Equations and Biological Computation".

The school has established one of the first national centers for Applied Mathematics National Center for Applied Mathematics in Hunan (supporting unit), an Innovation and Intelligence Introduction Base for the Mathematics discipline (111 Base), a Key Laboratory of the Ministry of Education for "Intelligent Computing and Information Processing", a Key Laboratory of Hunan Province for "Scientific Engineering Computation and Numerical Simulation", an International Cooperation Research Platform for "Computational Science" under the Science and Technology Innovation Base in Hunan Province, a key Laboratory of Mathematical Theory of Fluid Mechanics and Its Applications for Higher Education Institutions in Hunan Province, and Hunan Research Center of the Basic Discipline Fundamental Algorithmic Theory and Novel Computational Methods. These research platforms undertake a multitude of national key research projects, including national key

research and development projects, major research plans supported by the National Natural Science Foundation of China, key projects of the National Natural Science Foundation of China, major special projects of the National Science and Technology, and various other research initiatives. The school has achieved recognition through numerous awards, including one Second Prize of the National Natural Science Award, three awards from the Ministry of Education for Natural Science (including one First Prize and two Second Prizes), one Feng Kang Scientific Computing Award, nine awards in natural science categories (including one First Prize and eight Second Prizes) from the Hunan Provincial Science and Technology Award, and one Second Prize for Technological Progress in Hunan Province.

The school has achieved remarkable success in talent cultivation, with a number of outstanding individuals emerging among its graduates. Two alumni have been elected as academicians of the Chinese Academy of Sciences and the Academy of Sciences for the Developing World. Additionally, over 10 individuals have been recipients of the National Science Fund for Distinguished Young Scholars, while seven have received awards such as the National Natural Science Award and the National Science and Technology Progress Award. Moreover, six individuals have been invited to deliver keynote presentations at prestigious international conferences, including the International Congress of Mathematicians and the International Congress on Industrial and Applied Mathematics. Two alumni have been elected as Fellows of the American Mathematical Society and the Society for Industrial and Applied Mathematics, while more than 10 individuals have received accolades such as the Outstanding Contribution Award from the American Society for Industrial and Applied Mathematics, the Humboldt Senior Scientist Award in Germany, the Shiing Shen Chern Mathematics Award, the Ho Leung Ho Lee Foundation Science and Technology Progress Award, and the Su Buchin Prize in Applied Mathematics.

The organizing committee wishes you a pleasant stay in Xiangtan!